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A COAXIAL LOW PRESSURE INJECTION METHOD AND A GAS COLLIMATOR FOR A KINETIC SPRAY NOZZLE

Abstract of the Disclosure

A new gas collimator for use in a kinetic spray system is disclosed. The collimator reduces turbulence of the main gas and results in significant increases in the amount of particles deposited on a substrate using the system. Kinetic spray nozzles incorporating the new collimator also have significantly higher deposition efficiencies. The new collimator enables the main gas temperature to be reduced while permitting much higher depositions and deposition efficiencies compared to the prior art collimator. Also disclosed is a low pressure injection method for a kinetic spray system. The coaxial, low pressure injection method enables the use of low pressure powder feeders, which are low cost, technologically mature, and widely available commercially. The coaxial injection method overcomes several undesirable effects associated with prior art high pressure injection methods.